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(71) Applicant(s)  
**Ore-an Ltd**  
(Incorporated in the United Kingdom)  
**17-19 Branhholme Industrial Estate, Bailiff Bridge,**  
**BRIGHOUSE, West Yorks, HD6 4EA, United Kingdom**

(72) Inventor(s)  
**Stewart John Wark**

(74) Agent and/or Address for Service  
**D A Lister & Co**  
**5 Greenway, Honley, HUDDERSFIELD, HD7 2BZ,**  
**United Kingdom**

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(56) Documents Cited  
**EP 0734727 A2**      **US 5620695 A**      **US 5246693 A**  
**WPI abstract, accession number: 98-207871 &**  
**CH 688787 A5 (LINSIG, D. et al) 31.03.98**

(58) Field of Search  
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(54) Abstract Title  
**Essential oil composition for treatment of head-lice**

(57) The present invention relates to a method of treating head-lice involving applying to the hair and scalp a formulation, such as a shampoo, conditioner or treatment oil formulation, comprising, in combination, tea-tree essential oil, lavender essential oil and eucalyptus essential oil.

GB 2 341 091 A

"Hair Care"

This invention relates to hair care, and more particularly to a method of and formulations for treating head-lice.

5       Head-lice have always been a problem in human communities, their incidence rising and declining in 40 to 50 year cycles, and there is currently an epidemic. For safety reasons, treatment involving pesticides, which have in the past been used extensively for this purpose, is no  
10       longer officially recommended.

The object of the present invention is to provide an effective method for the treatment of head-lice using natural-based formulations.

According to one aspect of the invention, a method of  
15       treating head-lice involves applying to the hair and scalp a formulation including tea tree essential oil, lavender essential oil and eucalyptus essential oil in combination.

Preferably, the method comprises the successive use of a shampoo formulation, next a conditioner formulation and  
20       then a treatment oil formulation wherein at least the treatment oil formulation includes all three of said essential oils in combination.

Preferably, also, all three of said formulations include all three of said essential oils in combination.

25       Preferably, the method comprises applying the shampoo formulation at least once, rinsing the hair, applying the conditioner formulation without then rinsing the hair,

applying the treatment oil formulation, and leaving it on the hair for a period of 30 to 45 minutes before finally rinsing the hair.

Preferably, also, the method comprises leaving the  
5 shampoo formulation on the hair for one to two minutes before rinsing the hair.

Preferably, the method comprises placing a close-fitting cap on the head throughout the period that the treatment oil formulation is left on the hair.

10 Preferably, also, the method comprises combing the hair thoroughly with a fine-toothed comb before finally rinsing the hair.

According to another aspect of the invention, a shampoo or conditioner formulation for use in any of the  
15 methods set out in the preceding seven paragraphs comprises a selection of active ingredients including a selection of essential oils which includes tea tree essential oil, lavender essential oil and eucalyptus essential oil, said selection of essential oils falling within a range of 0.5  
20 to 10.0 per cent by weight of the formulation.

The selection of essential oils preferably includes also one, some or all of peppermint essential oil, rosemary essential oil and West Indian bay essential oil.

Preferably, the selection of active ingredients  
25 includes also a selection of other constituents including one, some or all of PEG-40 hydrogenated castor oil, sulphur, thyme extract, ichthammol, thyme oil and salicylic

acid, said selection of other constituents falling within a range of 0.5 to 10.0 per cent by weight of the formulation.

The selection of active ingredients preferably includes also a selection of extracts including one, some  
5 or all of sage extract, arnica extract, birch bark extract, camomile extract, yarrow extract and calendula extract, said selection of extracts falling within a range of 0.1 to 5.0 per cent by weight of the formulation.

Preferably, a shampoo formulation comprises also a  
10 selection of conventional shampoo ingredients and a selection of conventional conditioner ingredients.

A conditioner formulation preferably comprises also a selection of conventional conditioner ingredients.

Preferably, a treatment oil formulation for use in any  
15 of the methods hereinbefore set out comprises a selection of active ingredients including a selection of essential oils consisting of tea tree essential oil, lavender essential oil and eucalyptus essential oil, said selection of essential oils falling within a range of 2.0 to 50.0 per  
20 cent by weight of the formulation.

The selection of active ingredients in the treatment oil formulation preferably includes also a selection of extracts including one, some or all of sage extract, horsetail extract, stinging nettle extract, yarrow extract  
25 and neem extract, said selection of extracts falling within a range of 0.5 to 8.0 per cent by weight of said formulation.

Preferably, the treatment oil formulation comprises also a selection of conventional carrier oils.

The tea tree essential oil, the lavender essential oil and the eucalyptus essential oil are preferably used  
5 substantially in the ratio 20:3:1.

In a preferred embodiment of the invention, which is described by way of example, a shampoo formulation consists of:-

1. Shampooing ingredients:-

10 Aqua,  
Sodium Lauryl Ether Sulphate,  
Cocoamidopropyl Betain,  
Coconut Diethanolamide (and) Glycerine,  
Propylene Glycol (and) DMDM Hydantoin  
15 (and) Methylparaben (and) Propylparaben,  
Citric Acid.

2. Conditioning ingredients:-

Adipic Acid/Dimethyl-Aminohydroxy,  
Propyl Diethylenetriamine Copolymer,  
20 Polyquaternium-22,  
Wheatgermamidopropyl Dimethylamine,  
Hydrolised Wheat Protein,  
Pro-Vitamin B5.

3. Active ingredients:-

25 (A) Essential Oils:-

Tea tree essential oil  
Lavender essential oil

Eucalyptus essential oil

Peppermint essential oil

Rosemary essential oil

West Indian bay essential oil

5 (B) Other constituents:-

PEG-40 Hydrogenated Castor Oil (and) Sulphur

Thyme Extract (and) Ichthammol (and)

Thyme Oil (and) Salicylic Acid

(C) Extracts:-

10 Sage Extract (and)

Arnica Extract (and)

Birch Bark Extract (and)

Camomile Extract (and)

Yarrow Extract (and)

15 Calendula Extract.

The shampooing and conditioning ingredients listed above are conventional. The selection of essential oils listed above falls within a range of 0.5 to 10.0, and is preferably 2.5, per cent by weight of the shampoo formulation; the selection of other constituents listed above falls within a range of 0.5 to 10.0, and is preferably 2.5, per cent by weight of the shampoo formulation; and the selection of extracts listed above falls within a range of 0.1 to 5.0, and is preferably 1.0, per cent by weight of the shampoo formulation.

A conditioner formulation consists of :-

1. Conditioning ingredients:-

Aqua,

Cetearyl Alcohol,

Cetyl Trimethyl Ammonium Chloride,

Cocamide MEA,

5 Methylparaben,

Citric Acid

2. Additional conditioning ingredients:-

Polyquaternium-11,

Pro-Vitamin B5,

10 Avocado Oil,

Amodimethicone (and) Tallowtrimonium Chloride

(and) Nonoxynol-10,

Polyquaternium-22,

Wheatgermamidopropyl Dimethylamine,

15 Hydrolised Wheat Protein

3. Active ingredients:-

(A) Essential Oils:-

Tea tree essential oil

Lavender essential oil

20 Eucalyptus essential oil

Peppermint essential oil

Rosemary essential oil

West Indian bay essential oil

(B) Other Constituents:-

25 PEG-40 Hydrogenated Castor Oil (and) Sulphur

Thyme Extract (and) Ichthammol (and)

Thyme Oil (and) Salicylic Acid,

(C) Extracts:-

- Sage Extract (and)
- Arnica Extract (and)
- 5 Birch Bark Extract (and)
- Camomile Extract (and)
- Yarrow Extract (and)
- Calendula Extract.

The conditioning and additional conditioning ingredients  
10 listed above are conventional. The percentage ranges and  
preferred percentages of essential oils, other constituents  
and extracts are the same as those set out above in respect  
of the shampoo formulation.

A treatment oil formulation consists of:-

15 1. Carrier oils:-

- Sweet Almond Oil
- Grape Seed Oil
- Olive Oil
- Neem Oil

20 2. Active ingredients:-

(A) Essential oils:-

- Tea tree essential oil
- Lavender essential oil
- Eucalyptus essential oil

25 (B) Extracts:-

- Sage extract
- Horsetail extract

Stinging nettle extract

Yarrow extract

Neem extract

The selection of essential oils listed above falls within a  
5 range of 2.0 to 50.0, and is preferably 24.0, per cent by  
weight of the treatment oil formulation; and the selection  
of extracts listed above falls within a range 0.5 to 8.0,  
and is preferably 2.0, per cent by weight of the treatment  
oil formulation.

10 In all three of the aforesaid formulations, the tea  
tree essential oil, the lavender essential oil and the  
eucalyptus essential oil are used substantially in the  
ratio 20:3:1. We have found that these three essential  
oils when used in combination have an unexpected and  
15 significant synergistic effect in the treatment of head-  
lice, that is to say their combined effect is appreciably  
greater than the sum of their individual effects.  
Furthermore, there is a second-stage synergistic effect  
involving other active ingredients of the formulations.

20 The method of treatment is as follows:-

The hair is shampooed at least once and preferably  
twice in succession, each time using approximately 5  
millilitres of the shampoo formulation for short hair or 10  
millilitres thereof for long hair. Said formulation is  
25 massaged well into the scalp using the finger-tips, paying  
particular attention to the nape of the neck and behind the  
ears. The final shampoo is left on the hair for one to two

minutes before rinsing thoroughly with warm, not hot, water and then lightly towelling the hair until it is almost dry. The conditioner formulation is then applied to the freshly cleansed damp hair, using approximately 5 millilitres of

5 the conditioner formulation for short hair or 10 millilitres thereof for long hair. Said formulation is massaged into the scalp gently but thoroughly, and the hair is combed through using a large-toothed comb. The conditioner formulation is not rinsed out, but is left on

10 the hair. The treatment oil formulation is then applied directly to the scalp, using a droplet bottle, on top of the conditioner formulation previously applied. Approximately 5 millilitres of treatment oil formulation is used, or a little less for short hair, again massaging

15 gently but thoroughly into the scalp particularly at the nape of the neck and behind the ears. After massaging, a plastics cap is fitted closely over the hair using a clip or tie. This retains heat which intensifies the treatment, and helps to prevent dripping down the face. The treatment

20 oil formulation and the cap are left on for a period of 30 minutes for short hair and up to 45 minutes for long hair. After removing the cap the hair is combed through repeatedly using a fine-toothed comb, all residue being wiped from the comb onto a clean tissue and destroyed.

25 After combing, the hair is rinsed thoroughly using warm, not hot, water.

The formulation specified above, when used in accordance with the method described, effectively remove head-lice and their eggs from the hair and scalp, and have a residual repellency effect which provides a degree of resistance to re-infection. It is an important feature of the invention that the treatment oil formulation is applied last, after shampooing and conditioning. If the hair is clear of head-lice and continued repellency is desired, the treatment oil formulation can be left on the hair for considerably less than 30 minutes. The treatment is safe even on very young and old people. It is also a comprehensive treatment for other hair and scalp problems.

In one modification, only the treatment oil formulation includes tea tree essential oil, lavender essential oil and eucalyptus essential oil in combination. In another modification, only the conditioner formulation and the treatment oil formulation include said essential oils in combination. In a further modification, the cap is dispensed with.

Claims:-

1. A method of treating head-lice involving applying to the hair and scalp a formulation including tea tree essential oil, lavender essential oil and eucalyptus essential oil in combination.  
5
2. A method according to claim 1, comprising the successive use of a shampoo formulation, next a conditioner formulation and then a treatment oil formulation wherein at least the treatment oil formulation includes all three of  
10 said essential oils in combination.
3. A method according to claim 2, wherein all three of said formulations include all three of said essential oils in combination.
4. A method according to claim 2 or claim 3, comprising  
15 applying the shampoo formulation at least once, rinsing the hair, applying the conditioner formulation without then rinsing the hair, applying the treatment oil formulation, and leaving it on the hair for a period of 30 to 45 minutes before finally rinsing the hair.
- 20 5. A method according to claim 4, comprising leaving the shampoo formulation on the hair for one to two minutes before rinsing the hair.
6. A method according to claim 4 or claim 5, comprising placing a close-fitting cap on the head throughout the  
25 period that the treatment oil formulation is left on the hair.

7. A method according to any one of claims 4 to 6, comprising combing the hair thoroughly with a fine-toothed comb before finally rinsing the hair.

8. A shampoo or conditioner formulation for use in any of  
5 the methods claimed in claims 1 to 7, comprising a selection of active ingredients including a selection of essential oils which includes tea tree essential oil, lavender essential oil and eucalyptus essential oil, said selection of essential oils falling within a range of 0.5  
10 to 10.0 per cent by weight of the formulation.

9. A formulation according to claim 8, wherein the selection of essential oils includes also one, some or all of peppermint essential oil, rosemary essential oil and West Indian bay essential oil.

15 10. A formulation according to claim 8 or claim 9, wherein the selection of active ingredients includes also a selection of other constituents including one, some or all of PEG-40 hydrogenated castor oil, sulphur, thyme extract, ichthammol, thyme oil and salicylic acid, said selection of  
20 other constituents falling within a range of 0.5 to 10.0 per cent by weight of the formulation.

11. A formulation according to any one of claims 8 to 10, wherein the selection of active ingredients includes also a selection of extracts including one, some or all of sage  
25 extract, arnica extract, birch bark extract, camomile extract, yarrow extract and calendula extract, said

selection of extracts falling within a range of 0.1 to 5.0 per cent by weight of the formulation.

12. A shampoo formulation according to any one of claims 8 to 11, comprising also a selection of conventional shampoo ingredients and a selection of conventional conditioner ingredients.

13. A conditioner formulation according to any one of claims 8 to 11, comprising also a selection of conventional conditioner ingredients.

10 14. A treatment oil formulation for use in any of the methods claimed in claims 1 to 7, comprising a selection of active ingredients including a selection of essential oils consisting of tea tree essential oil, lavender essential oil and eucalyptus essential oil, said selection of  
15 essential oils falling within a range of 2.0 to 50.0 per cent by weight of the formulation.

15. A treatment oil formulation according to claim 14, wherein the selection of active ingredients includes also a selection of extracts including one, some or all of sage  
20 extract, horsetail extract, stinging nettle extract, yarrow extract and neem extract, said selection of extracts falling within a range of 0.5 to 8.0 per cent by weight of said formulation.

16. A treatment oil formulation according to claim 14 or  
25 claim 15, comprising also a selection of conventional carrier oils.

17. A formulation according to any one of claims 8 to 16, wherein the tea tree essential oil, the lavender essential oil and the eucalyptus essential oil are used substantially in the ratio 20:3:1.

5 18. A method of treating head-lice substantially as hereinbefore described.

19. A shampoo, conditioner or treatment oil formulation substantially as hereinbefore described.



Application No: GB 9824592.1  
Claims searched: all

Examiner: Cass Dottridge  
Date of search: 28 January 1999

INVESTOR IN PEOPLE

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.Q): A5B BFC

Int CI (Ed.6): A61K 7/06, A01N 65/00

Other: WPI, MEDLINE, CAS-ONLINE, NAPRALERT

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	EP 734727 A2 (LINNHOFF, G.) whole document.	1 and 8 at least
X	US 5620695 A (ELLIOTT, J.) col. 1, ll. 11-17; col. 2, ll. 32-39.	
A	US 5246693 A (L'OREAL) col. 3, ll. 21-35.	
X	WPI abstract, accession number: 98-207871 & CH 688787 A5 (LINSIG, D. <i>et al</i> ) 31.03.98	n8 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.